THE
AMERICAN ANTHROPOLOGIST

VOL. IX WASHINGTON, D. C., MARCH, 1896 No. 3

SEVEN VENERABLE GHOSTS*

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In 1880 I was encamped on a plateau at the edge of a forest above the canyon gorge of a little stream. White men and Indians composed the party with me. Our task was to make a trail down this side canyon into the depths of Grand canyon of the Colorado. While in camp after the day's work was done both Indians and white men engaged in throwing stones across the little canyon, which was many hundreds of feet in depth. The distance from the brink of the wall on which we were camped to the brink of the opposite wall seemed not very great, yet no man could throw a stone across it, though Chuar, the Indian chief, could strike the opposite wall very near its brink. The stones thrown by others fell into the depths of the canyon. I discussed these feats with Chuar and led him on to an explanation of gravity. Now Chuar believed that he could throw a stone much farther along the level of the plateau than over the canyon. His first illusion was thus one very common among mountain travelers—an underestimate of the distance of towering and massive rocks when the eye has no intervening objects to divide the space into parts as measures of the whole.

I did not seek to correct Chuar's judgment, but simply to discover his method of reasoning. As our conversation proceeded he explained to me that the stone could not go far over the canyon, for it was so deep that it would fall before reaching the opposite bank; and he explained to me, with great care, that

*Address of the retiring President before the Anthropological Society of Washington, February 4, 1896.

the hollow or empty space pulled the stone down. He discoursed on this point quite at length and illustrated it in many ways. "If you stand on the edge of the cliff you are likely to fall; the hollow pulls you down, so that you are compelled to brace yourself against the force and lean back. Any one can make such an experiment and see that the void pulls him down. If you climb a tree, the higher you reach, the harder the pull; if you are at the very top of a tall pine you must cling with your might lest the void below pull you off."

Thus my dusky philosopher interpreted a subjective fear of falling as an objective force; but more, he reified void and imputed to it the force of pull. I afterward found these ideas common among other wise men of the dusky race, and once held a similar conversation with an Indian of the Wintun on Mount Shasta, the sheen of whose snow-clad summit seems almost to merge into the firmament. On these dizzy heights my Wintun friend expounded the same philosophy of gravity.

Now, in Chuar's language, a wise man is said to be a traveler, for such is the metaphor by which they express great wisdom, as they suppose that a man must learn by journeying much. So in the moonlight of the last evening's sojourn in the camp on the brink of the canyon I told Chuar that he was a great traveler, and that I knew of two other great travelers among the white men of the east, one by the name of Hegel, and another by the name of Spencer, and that I should ever remember these three wise men, Chuar, Hegel, and Spencer, who spoke like words of wisdom, for it passed through my mind that all three of these philosophers had reified void and founded a philosophy thereon.

In the history of philosophy an illusion is discovered concerning matter and each of its factors, which are number, extension, motion, and duration. Another illusion is discovered concerning judgment, which is the special factor of mind and which is always found associated with matter. Bodies are related particles of matter, each one of which has four factors; and mind, considered abstractly, is composed of related judgments, and, so far as we know, always associated with bodies. Thus we have relations, and relation itself comes to be the object of illusion. Matter is the substrate of all bodies. Bodies thus have a substrate, and the illusion concerning matter arises from considering that matter, which is the substrate, has also its substrate, which

is sometimes called substrate and sometimes called substance. Classes are orders of number. The illusion concerning number relates to class or kind, and is sometimes called essence. Extensions combined have figure and structure, which produce form, and the illusion concerning extension is an illusion in relation to forms which are derived from extensions, and is called space. Motions, through collisions, are forces, and the illusion concerning motion is also called force. Duration is persistence and change, which give rise to time, and the illusion concerning duration is also called time. Judgment is consciousness and inference, which give rise to ideas, and the illusion concerning idea is called ghost. Bodies are related to one another; hence numbers, extensions, motions, durations, and judgments are related. Certain of the relations of these things are called causality, and the illusion concerning relation is called cause.

Now it must be clearly understood that the terms substrate, essence, space, force, time, ghost, and cause sometimes refer to real things when properly used in science, and to illusions when they are improperly used, as they sometimes are in science and usually are in metaphysics. In general the term ghost is now used only in reference to an illusion, and this is the sole case where we have a term for an illusion which is commonly understood in that sense, but the term spirit is used in both senses for the certitude and the illusion.

The seven illusions here enumerated are perhaps the most fundamental and far-reaching of the vast multitude of illusions which appear in the history of error. The words substrate, essence, space, force, time, ghost, and cause are terms of universal use, and their synonyms appear in all civilized languages and perhaps in all lower languages. They have always stood for certitudes and illusions. Here they require definitions, both as certitudes and as illusions, in so far as we are able to define them.

Substrate is matter; matter is the substrate of all bodies. Essence is any collocation of units into a unit of a higher order, which makes it a kind or one of a class. Space is any extension or any collocation of extensions; force is any collocation of motions that are related by collisions; time is any duration or collocation of durations; mind or spirit or ghost is any judgment or collocation of judgments; cause is any antecedent or collocation of antecedents of a change. Such are the funda-

mental meanings of the words when used to designate realities. We shall hereafter see what they mean when they are used to designate illusions.

Substrate

Matter is the substrate of body and has no substrate for itself. All matter has four factors, number, extension, motion, and duration, and some matter at least has a fifth factor, namely, judgment. Matter is not a substrate for these factors, but exists in these factors, which are never dissociated, but constitute matter or are moments of matter, and this matter is the substrate of all bodies.

Essence

The term essence as used in philosophy is employed in a double manner and is thus often ambiguous. It is sometimes used as a synonym for substrate of matter; at other times it is used to designate the occult substrate of class. In this last sense it is here used. Essence, then, is the number essential to make an order or kind or a class. As the whole number is essential, every one is essential; they are severally and conjointly essential, so that it is possible correctly to speak of them all as being essential and to speak of every one severally as being essential. All of the particles which make up a body are conjointly and severally essential to that body, and the essence of a body is the hierarchy of particles of which it is composed. The term essence, therefore, is a general term or pronoun for all collocations of number and its special meaning is derived from the context. As an illusion, essence is the name of an unknown something which produces a kind or class and is a property of an unknown or unknowable substrate of matter.

If as the chemist believes, with much good reason, the ultimate chemical particles are alike, they are alike only in number, extension, motion, and duration; they are unlike in association, position, direction of motion, and the duration of association, so that likeness and unlikeness is inherent in matter itself. In bodies innumerable combinations of number, extension, motion, and duration are found, and out of these are developed innumerable likenesses and unlikenesses, so that one body is like another in many respects and unlike that other in many other

respects. The science of classification takes these likenesses and unlikenesses and discovers degrees among them which are of profound importance in the study of the world and upon which a large share of knowledge rests. All knowledge does not rest upon likeness and unlikeness—that is, upon number—but likeness is founded upon number, and men have discovered that what is true of a body is true of any other body of like kind, under the axiom that whatever is true of anything is true of its class identity in so far and in so far only as it is a constant property or an absolute, and not in so far as it is a variable or relative. These are all simple, self-evident propositions, but in the compounding and recompounding of matter it is not always possible to disentangle the constants from the variables. Men lost in the meaning of words, forever gazing into linguistic jungles, have engaged in discussions about essences and have at last reified the word as something which is not number, associated with extension, motion, and duration, but as some occult existence unknown and unknowable, which gives to bodies their likeness or unlikeness. Having reached the conclusion that matter is something more than its factors, an occult, unknown, and unknowable substrate, they take the next step that the essence of class or likeness and unlikeness exists not in the fundamental properties of body or the fundamental constituents of matter, but in their substrates.

All known things are classified either properly or improperly. The characters upon which they are classed are thus innumerable. These characters which constitute class are all the bodies embraced in the class and all the properties embraced in all the bodies of the class. The term essence, then, used in this sense means all of these things. The term essence, therefore, is a general name for everything in the universe, but obtaining its particular meaning in any case by the context. What is the meaning of the word *this?* It may be applied to any constituent of matter, to matter itself, to any body or to any property or any relation in the material world, and to any idea in the mental world, and its meaning is derived from the context; it has no definite meaning in itself. Essence as a word used by philosophers is a pronoun of like character, without specific meaning, and attains its specific meaning only by the context; it has one meaning at one time and another at another, and thus it seems

to be illusive. As the substrate of matter, a reified nothing, is entertained in the minds of some as an entity, so some thinkers make essence a property of this substrate—a nonentity of a nonentity. Chuar, Hegel, and Spencer reason in this manner. Essence as connoting the essential characters of a class is a word the meaning of which scientific men clearly understand. It is never ambiguous, although naturalists may sometimes disagree about the essentiality of a particular character, but the essence of which the metaphysician thinks is nonexistent, the opinions of the three wise men to the contrary notwithstanding.

Space

The word space is the general term or pronoun of all extensions, figures, and structures of extensions in the multitudinous bodies of the world. There are many extensions, and every known body is a constituent of some other body until the mind is lost in immensity. The space occupied by a body is its extension in structure and figure. This desk before me has extension, or we say that it occupies space; the space which it occupies is its extension, from which it excludes other bodies. Remove the furniture from the room, it is said to be empty, yet it is full of air; remove the air from the room, yet it is full of ether; remove the ether—maybe, we know not, all is removed; the wall incloses void—nothing—but the walls of the room yet have extension, and we can measure this by measuring the wall; but void cannot be measured; there is nothing to be measured. Thus it is that space is the pronoun of all dimensions of all bodies severally and conjointly, and as they are variable space seems to be illusive, and it comes at last in the minds of careless thinkers to mean something more than extension, an unknown and unknowable thing that, like essence, belongs to the unknown and unknowable substrate of matter. The word is useful when its use is understood as a pronoun or general word whose meaning is given by the context.

Force

Force is the pronoun or general term of motion or the combination of motions as force. It thus may be applied to numerous things now existing or which have existed in the past or may exist in the future. It is the general word for all collisions and

all combinations of collisions; collisions of particles of ether in light and heat, collisions of particles of air in sound, collisions of particles of water in stress, collisions of particles of matter in all solids exhibited in the structure and strength of those materials. It thus stands for the action of two or more bodies as they come in collision and thus influence each other's motions. It is not an occult, unknown and unknowable something which belongs to an occult, unknown and unknowable substrate. The term has no particular or determined meaning in itself, but derives its meaning from the context. It is a word of universal application, which derives it meaning by its application; it is the general term or pronoun to denote any or all actions and reactions.

Time

Time is the general term or pronoun of all durations and it means any duration to which the term is applied, all durations or any collocation of durations the mind may entertain. When reified it comes to be thought as an existence independent of the things which have duration. Then time, like essence, space, and force, becomes a property of the substrate of matter—an illusion about an illusion.

Spirit

Spirit is a general term or pronoun for all judgments in the infinite variety of sensations, perceptions, understandings, and reflections. It is a name for all ideation. It is known to us only in its association or connection with the universal constituents of matter, which are number, extension, motion, and duration. There is no spirit which has not a unity of many in one. There is no spirit which has not force; there is no spirit which has not duration. In so far all are agreed; and it is here affirmed that there is no spirit which has not extension, for without extension all the other constituents would vanish—become nothing, absolutely unimaginable or unthinkable. When spirit is considered to be something which has not number, or many in one which has not extension with figure and structure, without force or the power of action and reaction, and without duration as persistence or persistence and change—that is, without time—it becomes a nonentity, a nothing, and it is then an illusion, and is usually called ghost.

Cause

We use the word cause as we use the words *this* and *that*, as a general term or pronoun for anything that stands in relation to any other thing in the production of a change. The multitudinous bodies and particles of the universe coöperate with one another in the production of changes. The condition before the change is considered in respect to the condition after the change, and whatever previous condition coöperated in the production before the change is called a cause, and whatever condition is discovered after the change is called an effect. It is thus that the term cause may be applied to any body, to any property, any relation, or any quality; it is a term for any of these things, any collocation of these things, or any part of these things, and just what its meaning may be can be discovered only by the context in which the word is used. In the multitude of bodies, properties, and relations which coöperate in the production of the change whose result is called an effect, we may stop to consider any one and call that the cause. Failing to appreciate the variable significance of the word, men are led into the illusion that there is some entity, some separate existence called cause.

Metaphorically, essence is sometimes used for space, sometimes for force, sometimes for time, sometimes for spirit, and sometimes for cause, and interchangeably all of these terms may be used as metaphors for one another. Thus it is that we have a family of chimeras in substrate, essence, force, time, ghost, and cause that are not bodies or the properties of bodies, but nonexistence things—mysteries that are at the foundation of all philosophies of the unknowable and all philosophies of the contradictory and the ground of all antinomies. They constitute the substrate, the essence, the space, the time, the cause of the philosophies of the three wise men, Chuar, Hegel, and Spencer.

It is within the experience of every human being, and has been through all generations, that man is forever discovering number, extension, motion, duration, and judgment. He learns something of number in infancy and adds to his knowledge daily and extends his knowledge to an indefinite multiplicity. He adds to his knowledge the extension of one body and another still embodied in a higher order, and thus his knowledge of extension increases to an indefinite extent. He is forever discovering

new motions and new combinations of motions as forces and finds that he is able thus to add more and more of like motions and forces to his knowledge. Ever he is discovering durations, the durations of coexistent things and the durations of past things beyond to high antiquity, and he prophesies of durations to come, and many do come, until his mind is led into the illimitable future. Mind is thus trained by constant experience to expect a further enlargement of knowledge and to consider the possibilities into which it may expand until it dwells upon endless number, endless extension, endless force, endless duration. Man contemplates multiples and submultiples of the things of which he already has knowledge, and then invents implements of research by which submultiples are discovered, and other instruments by which multiples in higher orders are discovered. Finding that he has explored but a small part of the universe, and that within the universe wherever bodies are to be met they have been resolved into numbers, extensions, motions, and durations, he grasps the idea of infinity not as something other than that of which he knows, but as more of that which he best knows. The experience of men through countless generations has organized the concepts of number, extension, motion, and duration as the universal factors of matter, and never has any mind discovered any other thing saving only those which are included in the terms of mind, but of matter without mind man has absolutely no vestige of knowledge which is not included under the terms number, extension, motion, and duration. These terms absorb them all; therefore matter is number, extension, motion, and duration, and at least some matter has judgment.

The mind discovers another factor or category in the universe, judgment, which develops into cognition of the constituents of matter, of their relations, and also a cognition of cognition and the relations of cognitions. It is thus that the universe is resolved into material elements and cognitions, the five things best known, and science in dealing with the universe explains them by resolving them into these best known things. Science does not lead to mystery, but to knowledge, and the mind rests satisfied with the knowledge thus gained when the analysis is complete, when any newly discovered body is resolved into its constituents or any new idea into its cognitions.

Concepts of number, extension, motion, duration, and judgment are developed by all minds, from that of the lowest animal to that of the highest human genius. Through the evolution of animal life these concepts have been growing as they have been inherited down the stream of time in the flood of generations. It is thus that an experience has been developed combined with the experience of all generations of life for all the time of life, so that it is impossible to expunge from human mind these five concepts. They can never be canceled while sanity remains. Things having something more than number, extension, motion, duration, and judgment cannot even be invented; it is not possible for the human mind to conceive anything else, but semblances of such ideas may be produced by a mummification of language. Ideas are expressed in words, which are symbols, and the word may be divested of all meaning in terms of number, extension, motion, duration, and judgment and still remain, and it may be claimed that it still means something unknown and unknowable, and this is the origin of reification. There are many things unknown at one stage of experience which are known at another, and man comes to believe in the unknown by constant daily experience, but has by further converse with the universe known things previously unknown, and they invariably become known in terms of number, extension, motion, duration, and judgment and are found to be only combinations of these things. It is thus that something unknown may be imagined, but something unknowable cannot be imagined.

No man imagines reified substrate, reified essence, reified space, reified force, reified time, reified ghost, or reified cause. Words are blank checks on the bank of thought to be filled with meaning by the past and future earnings of the intellect; but these words are coin signs of the unknowable and he can never acquire the currency for which they call. Things little known are named and man speculates about these little known things and erroneously imputes properties or attributes to them until he comes to think of their possessing such unknown and mistaken attributes. At last he discovers the facts. Then all that he discovers is expressed in the terms of number, extension, motion, duration, and judgment. Still the word for the little known thing may remain to express something unknown and mystical, and by simple and easily understood processes he reifies what is not and

reasons in terms which have no meaning as used by him. Terms thus used without meaning are terms of reification.

Such terms and such methods of reasoning become very dear to those immersed in thaumaturgy and who love the wonderful and cling to the mysterious, and the pure water of truth is insipid in the revelry developed by the hashish of mystery. The dream of intellectual intoxication seems more real and more worthy of the human mind than the simple truths discovered by science. There is a fascination in mystery and there has ever been a school of intellects who have delighted to revel therein, and yet in the grand aggregate there is a spirit of sanity extant among mankind which loves the true and simple.

Often the eloquence of the dreamer has even subverted the sanity of science, and clear-headed, simple-minded scientific men have been willing to affirm that science deals with trivialities, and that only metaphysics deals with the profound and significant things of the universe. In a late great text-book on physics, which is a science of simple certitudes, it is affirmed:

> To us the question, WHAT IS MATTER?—What is, assuming it to have a real existence outside ourselves, the essential basis of the phenomena with which we may as physicists make ourselves acquainted?—appears absolutely insoluble. Even if we become perfectly and certainly acquainted with the intimate structure of what we call Matter, we would but have made a further step in the study of its properties; and as physicists we are forced to say that while somewhat has been learned as to the properties of Matter, its essential nature is quite unknown to us.

We know much about matter, and although we do not know all, all we know is about matter in its categories of number, extension, motion, and duration and what we know of mind in the category of judgment, but always this mind is associated with matter.

In the intoxication of illusion facts seem cold and colorless, and the wrapt dreamer imagines that he dwells in a realm above science—in a world which absorbs truth as the ocean the shower and transforms it into a flood of philosophy. Feverish dreams are held to be glimpses of the unknown and unknowable, and the highest and dearest aspiration is to be absorbed in this sea of speculation, and nothing is worthy of contemplation but the mysterious. Yet the simple and the true remain. The history of science is the history of the discovery of the simple and the

true; in its progress illusions are dispelled and certitudes remain.

Science deals with reality. If science deals with realities and not chimeras, it is proper to ask what are these realities. The realities with which science deals are bodies in their relations to one another and the properties which they present in their relations. All of the facts embraced in this vast field of research are expressed in terms of number, extension, motion, duration, and judgment; no other terms are needed and no other terms are coined; but sometimes these terms lapse by a process well known in philology as a disease of language into meanings which connote illusions. The human intellect is of such a nature that it has notions or ideas which may be certitudes or illusions. All the processes of reasoning, including sensation and perception, proceed by inference; the inference may be correct or erroneous, and certitudes are reached by verifying opinions. This is the sole and only process of gaining certitudes. Some of the phenomena of the universe are thus certitudes, others are illusions. The certitudes discovered are truths which properly represent noumena, the illusions are the errors which misrepresent noumena. All knowledge is the knowledge of noumena, and all illusion is erroneous opinion about noumena. The human mind knows nothing but realities and deals with nothing but realities, but in this dealing with the realities, the noumena of the universe, it sometimes reaches conclusions that are correct, other times incorrect. The correct conclusions are certitudes about realities, the incorrect conclusions are illusions about realities. Science is the name which mankind has agreed to call this knowledge of realities, and error is the name which mankind has agreed to give to all illusions. Thus it is that certitudes are directly founded upon realities, and illusions, as they are always about realities, are thus indirectly though incorrectly founded upon realities; but certitudes and illusions alike all refer to realities. In this sense, then, it may be stated that all error, as well as knowledge, testifies to reality, and that all our knowledge is certitude based upon reality, and that illusions would not be possible were there not realities about which inferences are made.

Known realities are those things about which mankind has knowledge; unknown things are those things about which man has not yet obtained knowledge. Scientific research is the en-

deavor to increase knowledge, and its methods are observation, experience, and verification. Illusions are erroneous inferences in relation to known things. All certitudes are described in terms of number, extension, motion, duration, and judgment; nothing else has yet been discovered and nothing else can be discovered with the faculties with which man is possessed.

In the material world man has no knowledge of anything which is not a unity of itself or a unity of a plurality. In the material world man has no knowledge of anything which is not an extension or a combination of extensions. In the material world man has no knowledge of anything which has not motion or a combination of motions as force. In the material world man has no knowledge of anything which has not duration as persistence or duration as persistence and change.

In the mental world man has no knowledge of anything which is not a judgment consisting of a consciousness of something or a consciousness and an inference about something.

In the universe man has no judgment which is not a judgment about a body with number, extension, motion, and duration, and, if an animate body, of judgment.

Every notion of something in the material world devoid of one or more of the constituents of matter is an illusion; every notion of something in the spiritual world devoid of the constituents of matter and cognition is an illusion.

About the name matter strange illusions have gathered. Matter or, as it is sometimes called, substance has often seemed to mankind to evolve out of nothing and to evanish into nothing. The bodies which man observes and with which he deals appear to come and go. The factors of matter as the properties of bodies severally seem to come out of the void and to evanish into the void. As science advances the appearance and disappearance of matter is discovered to be an illusion, and now the persistence of matter is the universal postulate of science; but the persistence of the factors of matter, which are number, extension, motion, and duration, is but slowly gaining ground in current opinion. Several illusions about the factors of matter are founded upon an illusion concerning the nature of matter itself. By some, matter, which is the substrate of all bodies, as heretofore demonstrated, is supposed itself to have a substrate about which the factors of matter are gathered, and that in some unexplained

and some unexplainable manner these factors may disappear and leave behind the substrate. In late years, even in high scientific circles, the illusion that motion may appear and disappear has often been entertained. Another illusion of the same nature is still more common—it is that motion is an acrobat that can leap from one particle of matter to another; that the motion of one particle as speed may be transferred to another particle as speed, while in fact the speed of a particle can never be increased nor diminished, but colliding particles may change each other's trajectories. The fire on the hearth melts the ball of wax, and it is supposed that molecular motion as the speed of heat goes out of the fire through the wax through the medium of the air and through the medium of the ether; but the products of combustion lose no motion as speed, and the air and the ether gain no motion as speed, but trajectories only are changed; the particles of wax gain no motion as speed, but the trajectories of its particles are changed and its structural motion is transformed into heat motion. Heat as speed cannot be dissipated, but no collision between two particles can be repeated until their deflected trajectories are so changed that they once more impinge in collision. It has been shown that matter is the universal substrate of body, and that its factors are the universal substrates of the properties of body, and that no other substrates are needed for the explanation of material bodies.

In the growth of human opinions many illusions have been entertained and many still remain. Many things are unknown, and the illusions appertain to the unknown things. Under these circumstances the substrate of matter as an occult substance still lingers in human opinions. What this substance is no one attempts to characterize, except directly or indirectly to affirm that it is the ghost of matter—a reified nothing—a name that stands for a vast multitude of hereditary illusions.

Matter without number cannot exist. It must be one or more than one, and the mind refuses to entertain any idea of matter without number. Matter without extension cannot exist, and the mind refuses to entertain any concept of matter that has not extension. Matter without motion or force cannot exist, and the mind refuses to entertain the concept of matter without force, at least as inertia, and now it is demonstrated that inertia itself is motion. Matter without duration cannot exist, and the mind

refuses to entertain any concept of matter without duration. Annihilate its persistence and the matter is annihilated; annihilate its motion and the matter is annihilated; annihilate its extension and the matter is annihilated; annihilate its number and the matter is annihilated.

We may have an idea of matter that seems not to have judgment. By most of mankind such an idea is entertained for all inanimate matter. About vegetal matter most men entertain the same idea, while with all men judgment is attributed to animate matter as animate body, but it is absolutely impossible to entertain the idea that judgment can exist by itself. A judgment must be a judgment by an animate body, with all of the factors of material body. A judgment which is not the judgment of some one extended, moving, and produced body—some animal body which has grown from its birth—is an absurdity. If there are any other properties necessary to material and animate bodies they cannot be named; they cannot be described; there are no terms in language by which they can be expressed; their supposed existence is an illusion. Related unities and pluralities are the comprehended. The ultimate unit and the universal are the ultimate antitheses. The known unities and pluralities are the known correlates. We thus discover and know the correlates, but infer the ultimate antitheses. Inference always precedes knowledge and knowledge is verified inference. All we know is still about the ultimate unit and the universal, but we do not know all about the ultimate unit and the universal. The ultimate unit and the universal are neither unknown nor unknowable, and, while but partly known, they are the best known; or the matter may be stated in this manner: all we know is about number, extension, motion, duration, and judgment severally and conjointly. What we know about them is all we know. All we know about the factors we know about the universe; all we know of the universe we know of the factors. The universe in its factors is the best known and only known and is not unknown and unknowable, as is often affirmed in philosophy. Suppose I began to build up a knowledge of my acquaintance upon his unknown attributes. I should soon have a fine body of phantasms. But if I build upon the known, I may enlarge the realm of known verities.

There are two schools of philosophy, one building upon the known, the other building upon the unknown; that which is built upon the known is science, that which is built upon the unknown is metaphysics or transcendental philosophy.

By introduction I form a new acquaintance. At once I find that I know much about that acquaintance. I know that he is a man and that he has a history. As we become intimate I know more and more about him; he is neither unknown nor unknowable to me, but he is only partly known, for I may never know all about him. But I am determined to know my man, the very foundation of his character, so I neglect his judgments of the world, I neglect his physical constitution, I neglect everything but his chemical constitution, for example, and discover the particles or elements of which he is combined, and I reach the substrate of the physical constitution of the man in the atoms of which he is composed, and find there numbers, extensions, motions, and durations, and turn with disgust from this knowledge and long for the unknown and unknowable and weep because I cannot know the substrate of the substrate—the essence of this thinking, feeling, doing man. I aspire to transcendental knowledge, to something more than a knowledge of the man and his environment; it is an illusion. There is nothing more of the man to investigate than the five factors of which the man is composed and his relations to the universe.

If we attempt to describe anything in the universe we are always compelled to describe it in terms of number, extension, motion, and duration. You cannot even characterize God in any other terms. Enumerate his attributes: he is infinite, one or many in one; omnipresent, exists in all extensions; omnipotent or all powerful; persistent or eternal; omniscient or all-wise. Go on, say something more of God, and you will find that there is no term which you can use which does not express a property of one or more of the five factors or a relation. There is no idea of God, spirit, man, animal, or inanimate body which is not an idea composed of these elements. Language refuses to speak of anything else. Ideas are compounded judgments of nothing else, and nothing else is known or can be imagined to exist except as a name which has no meaning, for when we attribute meaning to any name its meaning must be expressed in terms of the factors of body.

The substrate of matter as substance or essence is the mummy of dispelled illusions, but the certitudes remain as the foundation of all science. If we want to know the universe we must investigate the numerical relations of its atoms and bodies, and this requires labor; we must then investigate its forms or the relations of its extensions, but this requires labor; we must then investigate its motions and the relations of the forces derived therefrom, but this requires labor; we must then investigate the persistence and relations of bodies as they proceed in the flux of production, but this requires labor; then we must investigate the judgments of mind and the relations of these judgments as they are compounded in ideas, but this requires labor. All mankind have engaged in these labors and the problems are not all solved, and they seem more today than they ever did. Oh, for some short road to knowledge, some fundamental science of substance or principle or idea or word which will be a competent guide and explain all! This short road is never found.

Matter as particles of four factors is easily understood, but when we suppose the factors are but accidents and that the particles remain after the accidents have disappeared, then we land in the realm of illusions. John Locke, who could analyze ideas better than he could phrase them, put this subject in a nutshell:

> They who first ran into the notion of accidents, as a sort of real beings that needed something to inhere in, were forced to find out the word substance to support them. Had the poor Indian philosopher (who imagined that the earth also wanted something to bear it up) but thought of this word substance, he needed not to have been at the trouble to find an elephant to support it, and a tortoise to support his elephant; the word substance would have done it effectually. And he that inquired might have taken it for as good an answer from an Indian philosopher,—that substance, without knowing what it is, is that which supports the earth, as we take it for a sufficient answer and good doctrine from our European philosophers,—that substance, without knowing what it is, is that which supports accidents. So that of substance, we have no idea of what it is, but only a confused, obscure one of what it does.

Whatever a learned man may do here, an intelligent American, who inquired into the nature of things, would scarce take it for a satisfactory account, if, desiring to learn our architecture, he should be told that a pillar is a thing supported by a basis, and a basis something that supported a pillar. Would he not think himself mocked instead of taught with such an account as this? and a stranger to them would be very liberally instructed in the nature of books and the things they contained if he should

be told that all learned books consisted of paper and letters, and that letters were things inhering in paper and paper a thing that held forth letters—a notable way of having clear ideas of letters and paper. But were the Latin words *inhærentia* and *substantio* put into the plain English ones that answer them and were called sticking on and underpropping, they would better discover to us the very great clearness there is in the doctrine of substance and accidents and show of what use they are in deciding of questions in philosophy.

* * * * * * *

The mind being, as I have declared, furnished with a great number of the simple ideas, conveyed in by the senses as they are found in exterior things or by reflection on its own operations, takes notice also that a certain number of these simple ideas go constantly together, which being presumed to belong to one thing and words being suited to common apprehensions and made use of for quick dispatch, are called, so united in one subject, by one name, which by inadvertency we are apt afterward to talk of and consider as one simple idea, which indeed is a complication of many ideas together, because, as I have said, not imagining how these simple ideas can subsist by themselves, we accustom ourselves to suppose some substratum wherein they do subsist and from which they do result, which therefore we call substance.

So that if any one will examine himself concerning his notion of pure substance in general he will find he has no other idea of it at all, but only a supposition of he knows not what support of such qualities which are capable of producing simple ideas in us, which qualities are commonly called accidents. If any one should be asked, what is the subject wherein color or weight inheres, he would have nothing to say, but the solid extended parts; and if he were demanded, what is it that solidity and extension adhere in, he would not be in a much better case than the Indian before mentioned, who, saying that the world was supported by a great elephant, was asked what the elephant rested on; to which his answer was, a great tortoise; but being again pressed to know what gave support to the broad-backed tortoise, replied, something, he knew not what. And thus here, as in all other cases where we use words without having clear and distinct ideas, we talk like children, who being questioned what such a thing is, which they know not, readily gave this satisfactory answer, that it is *something*, which in truth signifies no more when so used, either by children or men, but that they know not what, and that the thing they pretend to know and talk of is what they have no distinct idea of at all, and so are perfectly ignorant of it and in the dark. The idea then we have, to which we give the general name substance, being nothing but the supposed, but unknown, support of those qualities we find existing, which we imagine cannot subsist *sine re substante* without something to support them, we call that support *substantia*, which according to the true import of the word is in plain English standing under or upholding.

The illusion of substrate has taken many forms. It comes down to us from Greek philosophy under the terms phenomena and noumena. Many illusions appear in barbaric philosophy, and some of these were discovered by the Greeks. So many were the illusions that knowledge itself seemed to be illusion, and in fact many of the judgments which were yet supposed to be knowledge were illusions. Largely the old philosophers did not distinguish between illusions as erroneous judgments and the realities of the world, so they characterized the world as a congeries of illusions, which they called phenomena; yet they held that there was a substrate for phenomena, which they called noumena, and to a greater or less extent this substrate, this substance, was called an unknown and unknowable noumenon. It was a natural reaction against superstition for the illusions of the ignorant which were woven as threads of opinion into philosophy and held to be the very foundation of their institutions. Instead of characterizing illusions as illusions and certitudes as certitudes they characterized the world as appearance only and dreamed of an unknown and unknowable reality. From these phantasms have sprung many forms of esoteric philosophy.

About a century ago there was a great revival of this transcendentalism, which sought to characterize this substrate, this substance, this noumenon, as the absolute or the reality or as the thing in itself. Instead of searching for the truth by scientific investigation and thereby dispelling illusions, they held science in contempt and characterized it as a chimera and sought to bury it in the fog of the absolute—the real philosophy, as they vainly dreamed.

It is singular what antipathy was developed in the minds of these philosophers to relations. Relations of number give kinds; relations of extension give structure; relations of motion give coöperation; relations of duration give evolution; but they had an intense hatred of kinds, structures, coöperations, and evolutions. They sought the unrelated, the absolute, the reality, the thing in itself, and died without the sight.

We have now discussed universal certitudes or realities and seven great historical illusions concerning them. Let us now put these certitudes and illusions into a compact statement.

Matter composed of properties or factors is the substrate of all bodies. This is the first certitude, and the first illusion is about

substrate. It is that there is something in the universe which is the substrate of matter—that is, a substrate of the substrate to which the factors adhere as accidents from which they may be taken away, leaving the substrate behind.

The second certitude is this: that the kinds of things in the universe depend upon the number of atoms of which they are composed in hierarchies of units. The corresponding illusion consists in supposing that there is an essence, a something about which the particles of matter gather in organized units, and that these units may be taken away in part or in whole, and that this essence, this occult thing, remains as a kind or class.

The third certitude is this: that everything in the universe has form, and that these forms as extensions constitute space. The illusion concerning space is the belief that all of the bodies, as extensions and arrangements of extensions, may be annihilated, and that something remains still to be called space, a vacuum, a void, which is a real thing.

The fourth certitude is this: that every body and every particle of every body has motion, and that a combination of the motions of bodies is force. The illusion of force consists in believing that force may exist without motion, and hence without extension and without number, and that there is something in the universe which is force itself, which produces motion and also produces extension and number.

The fifth certitude is this: that there is something in the universe which we call mind or spirit, which is composed of judgments, and that this mind is always associated with matter; that there can be no mind without matter organized into bodies. The illusion concerning matter, which is usually called ghost, consists in supposing that mind can exist without unity or plurality; that it can exist without extension or form; that it can exist without motion or force, and that it can exist without duration, as persistence and change.

The sixth certitude is this: that the universe persists in its substrate, which is forever changing in its incorporation into bodies, and that the persistence of matter is thus divided into states while the bodies continue, and that these states are separated by events of change. The certitude concerning this persistence and change with its states and events we call time. The illusion concerning time consists in supposing that if all

bodies were annihilated, so that there could be nothing to persist and nothing to change, no states and no events, it would still remain as an occult but real existence.

The seventh certitude is this: that all the bodies of the universe are related one to another by five methods which grow out of the five properties of body, and as they are forever changing we call the antecedent terms causes and the consequent terms effects. Thus every antecedent relation is a cause. The illusion concerning cause consists in believing that there is a cause which is not an antecedent term but a self-existent cause—*a causa sui*—a cause that exists without bodies; that if all bodies were annihilated there would yet be a cause, an occult something, void of number, extension, motion, mind, persistence, and relation.

It would be a long story to set forth the origin of these delusions and the reason for their persistence, but one potent cause for their long life may be set forth. It has been shown that there are five properties of bodies that inhere in the bodies themselves. These are founded on number, extension, motion, judgment, and duration. These properties of bodies give rise to qualities which have been almost universally confounded with properties. The qualities of things are their relations to human purposes.

Number is a constant property of body and cannot be dissevered from it. The number five is unchangeable unless the bodies are increased or diminished. Here are five apples, and the number cannot be changed without adding or subtracting therefrom; but five apples may be few or many by a change in the point of view. The five apples in the tray at a dinner where twelve persons are sitting are few, but upon the plate of one of the guests are many. Thus it is that few or many imply end or some circumstance in view. Few and many are thus qualities, while five is a property of bodies. A barrel of apples on a table would be many, in the cellar plenty; in the warehouse where the steamer is seeking a cargo it would be few, and the merchant would not be considered as untruthful if by a figure of speech he affirmed that he had none.

Again, extension and form are properties, but they may easily become qualities where there is some purpose or idea in view. A pin may be large or small according to the hole which it is to

fill in the timbers of the house, and the same pin may be too large for one purpose and too small for another. The watchmaker uses a pin so small that it can be seen only with care, and yet it may be large or even too large for the purpose intended. A hill in the Park mountains would be called a mountain in the Catskills, and a mountain in the Catskills would be called a hill in the Himalayas. Thus properties are transformed into qualities by ideal circumstances. The razor is beautiful and good in the hands of a barber, but it is ugly and dangerous in the hands of an assassin. Thus properties are transmuted into qualities by human ideas. Red is beautiful in the rose, ugly in the spot of blood on the floor. The sheen of sable in the ouzel is beautiful, but the same sheen of sable on the carrion-loving buzzard is ugly. If all serpents were harmless, gentle, and intelligent, their lithe forms and gliding motions would be beautiful. If robins were poisonous, their red breasts would be symbols of horror. If the red lightning and the crimson cloud could change places, the one as a harbinger of summer rain and the other a visit of death, the lightning would be a thing of beauty and the cloud a terror.

The coming of the rain may be welcomed by the husbandman who has planted his field of corn; it may be unwelcome to the belated traveler. Time is long and weary to the invalid on the couch of pain; time is short and joyous to the child in the park.

It is thus that properties become qualities through our ideals, through the purposes which we have in view; properties are qualities when they are considered teleologically. There is no difficulty in distinguishing between qualities and properties as they have here been defined. Properties are not qualities and qualities are not properties, but qualities are founded upon properties with additional ideal elements. It is right, therefore, to say that properties are real in the sense that they are grounded on matter, and that qualities are ideal in the sense that they are dependent for their existence upon the mind. When we reflect upon these facts nothing can be more simple. The distinction can be discovered without difficulty, and it would seem that there need be no confusion between properties and qualities as here defined. To affirm properties is to affirm inseparable factors of matter, but to affirm qualities is to affirm things that change with the point of view. I see a man suddenly push another upon the

street, and think it rude and am indignant. The next moment I see that he saved him from falling into a pit, and in an instant the quality of the act is changed, and I call it wise and kind, while the activity as a property remains the same.

From the few examples I have given the distinction between properties and qualities will be made plain, and their discrimination is so easy and their distinction so simple that we are surprised that it has not always been seen. Ancient philosophers called them all qualities and attributed to real properties the characteristics of qualities, and this habit remains in metaphysical philosophy. It seems to be a habit which cannot be broken. Science for more than two thousand years has been investigating properties and has usually, though not invariably, distinguished between properties and qualities. If I were called upon for one criterion from which to distinguish science from speculation I should say that the one distinguishes properties from qualities, while the other confounds them; but here we reach the paradox of reason. A man may hold an opinion about a quality so tenaciously that it seems more real than a property. He can reason about a property, but his whole moral nature is aroused in the defense of a good quality or in the destruction of an evil quality.

Ride a thousand miles on a railway, enter a station where the coach comes to rest, let a train move by your side. Now during that long ride the moving landscape, the houses, the trees, the people, the animals, the birds were apparently in motion, but you soon make the habitual judgment that that which appeared to the senses as motion in the external world was in fact but your own motion in the car. Now that you are in the station this habit of judgment is exercised and the train that moves by you seems to testify to the movement of your own train. Habitual judgments can be made by the mind against the dictates of reason itself. In vision, color is the symbol of surface. Color is seen only on the surface. If the surface be removed, the color usually is changed, and you habitually judge that color means surface. Look into the heavens and see the sky; you know that there is no surface there, but you see it as a surface in spite of this knowledge. The ancients believed it was a surface. Among all savage and barbaric peoples it is held to be a surface, and our forefathers called it a firmament, a solid, so that even in our own language we have evidence of the time when this illusion was universal

among our ancestors. Thus it is that allusions about properties are persistent.

But allusions about qualities are more persistent when they come to be the conventional illusion of a people. If all the people with whom you have associated during the course of your life have affirmed that something is right, you cannot wholly believe that it is wrong, even though you know that it is wrong. If a deed is said to be evil and you have been so taught and believe and universally hear it so stated, though you may know that it is not evil, you cannot look upon it with complacency.

Properties cannot come out of nothing, nor can they evanish. Qualities, or our judgments of the relations of these properties to human motives, may change; they may rise and they may disappear. If now we consider properties in the same category with qualities, and attribute to properties the same characteristics that we attribute to qualities, we have a world of illusions, and this has been the practical result in one great school of thought.

These are the seven ghosts of science: the ghost of substance, the ghost of essence, the ghost of space, the ghost of force, the ghost of mind, the ghost of time, the ghost of cause—seven reified words, seven voids, seven nothings. These seven ghosts have haunted scientific men and even tainted the literature of science. These ghosts have had a special literature of their own from the days of Plato to the days of Hegel, for they have been the absorbing theme of speculators, of transcendentalists, or, if you please, of metaphysicians. They have stalked through the history of philosophy for more than two thousand years; they have terrified mankind as potent realities; they have deceived mankind as vanishing chimeras; they have allured mankind as will-o'-the-wisps, and their spectral forms have played pranks with the human reason in the jugglery of words and the trickery of dreams.

> And spirits now are banished from the clouds;
> No longer ride they in the tempest wild;
> And arched auroras glint without their aid;
> But skulking in the purlieus of deceit,
> They rap on walls and tumble tables low,
> And thrum on instruments in twilight gloom,
> Or mumble foolish messages from tomb.

Alas, how are the mighty fallen low!
The ancient spirit wild of rumbling storm
That swept in elder time primeval wood
Aroaring, shrieking through the brawny limbs,
Uprooting oaks a century of age,
And twisting pines as wands of willow lithe,
Is now a ghost ahaunting chimney stack,
In sooty ruins of an ancient cot
Where goats and asses graze deserted lot.

The battle-spirit, riding car of cloud
Athwart the sky in blazoned robes of red,
Presaging war and Slaughter's crimson tide,
Is now premonitory ghost of thief
On petty raid, who steals the plated spoon
And crouches under wall from light of moon.

The spirit fallen from its high estate
To grovel as a ghost among the lanes,
Has yet, alas! a lower fall to make.
Its very ghost life is denied it now;
Yclept telepathy, it plays the rôle
To aid an anile maid to sort the cards
At thought of sapient psychologist,
Coparcener of daft theosophist.

Thus disappear the themes of ancient tale:
The beast-lore grand of rude primeval time
Evanishes in tale of nursery;
The sky-lore fades away in metaphor;
And spirit-lore has run its mystic course
To meet its death by hand of psychic force.

LOUBAT PRIZE.—In the January number Prof. Henry C. Adams was mentioned as one of the members of the committee of award of the Loubat prize for original anthropologic work. Instead of that of Professor Adams the name of Mr W J McGee, of the Bureau of American Ethnology, Washington city, should have been given. Professor H. T. Peck (chairman), of Columbia College, New York, and Dr Daniel G. Brinton, of the University of Pennsylvania, are the other members of the committee.

HOME OF THE ARYANS.—The battle over the question, What was the original home of the Aryans? is still being waged with unabated vigor. However, the tide, which for the last few years has been with the European wing, appears to be turning again toward the Asiatic side, with which there is no doubt it will finally remain. The theory that this original home was in Europe is now, according to Professor Hommel, disposed of. He says (*Ausburger Zeitung*, August 28, 1895): "The European hypothesis so often and so strongly maintained, especially by the anthropologists, may now be considered as definitely buried, and Hen's fundamental doctrine that our little Europe has been again and again fertilized from Asia remains in possession of the field." It is stated that he has in preparation a work in which he claims that the Sumerian represents the oldest language of the world and bears relationship with Turco-Tartaric languages on the one side and the Aryan languages on the other. CYRUS THOMAS.

"AMERICA FOR THE AMERICANS" will answer for a political dogma even if it carries with it a tendency to narrowness, but we deprecate the manifest disposition of our ethnographers and philologists to make it a scientific one. We have particularly in mind our neglect to recognize in the African continent a vast and unexplored field for scientific research in almost every department of human knowledge, not only in ethnography and philology, but in history, in the foundation principles of jurisprudence and civil law, in mythology, in religion, in political economy, and in the political science of society and the state. In comparative philology we have a key to the history, habits, and customs of primitive races, and it seems especially absurd to neglect a factor in this study of such vast proportions as is presented to us on the "dark continent." Mr F. L. Wilson declares that the student of the next generation will find in Africa languages as elaborate and beautiful in structure and as musical in tone as any of the unspoken languages which delight the scholar. Mr Livingstone wrote of the Chua-na tongue, of which he was master, and which is but a sister of all the languages of the Bantu family, that "its capabilities are such that the Pentateuch was expressed in fewer words than in the compact Greek Septuagint."

EXPEDITION TO PAPAGUERIA AND SERILAND

A Preliminary Note

W J MCGEE

In the autumn of 1894 the Bureau of American Ethnology, with the specific approbation of the Secretary of the Smithsonian Institution, conducted an expedition (in charge of the writer) through the territory of the Papago Indians for the purpose of making collections representing the arts and industries of this tribe for the enrichment of the National Museum. A considerable collection was made and partially installed in the Museum, and a portion of it was exhibited at the International and Cotton States Exposition in Atlanta during the autumn of 1895. In addition to the objective material, this expedition yielded important data relating to the physical characteristics, habits, and customs of the Papago Indians, including several hundred photographs (made by Mr William Dinwiddie). While in the neighborhood of Sonora river advantage was taken of the opportunity to visit the territory of the Seri Indians, and the party were so fortunate as to find nearly a quarter of the tribe in a temporary rancheria on their borderland, near Rancho de San Francisco de Costa Rica, and a number of photographs, with objects illustrating their arts, a vocabulary, and other data were obtained. Since little was previously known concerning either the Papago or the Seri Indians, the results of the expedition were of special value;* but in both cases the material was incomplete and whetted the desire for more, and this desire led to the organization of another expedition last autumn. The chief desiderata in the latter expedition were (1) collections representing the maritime habits of the Seri, and (2) further information concerning the social organization of the Papago.

The party outfitted in Tucson and, leaving that point November 9, 1895, traversed Papagueria, visiting various villages and examining prehistoric works in Arizona and Sonora, reaching the Seri borders about the end of the month, a planetable route survey being carried forward by Mr Willard D. Johnson, while

*Some of the incidental results of the expedition of 1894 are summarized in "The Beginning of Agriculture," *American Anthropologist*, volume VIII, page 350.

a number of prehistoric works were mapped in detail. Early in December a small boat was built at Rancho de San Francisco de Costa Rica, and after a preliminary exploration of the Sonoran portion of Seriland, this vessel (the *Anita*) was transported to the coast of Kino bay, a part of the gulf of California. On entering Seriland, as the territory was spontaneously designated by different members of the expedition, the party was increased to twelve (four Americans, viz., W J McGee, Willard D. Johnson, and John W. Mitchell, of Washington, with S. C. Millard, of Los Angeles; two Mexicans, viz., Sr Andres Noriega, of Costa Rica, and Sr Ygnacio Castillo, of Hermosillo; five Papago Indians, viz., Mariana, Anton, Miguel, Anton Castillo, and Anton Ortiz, of Costa Rica; and one Yaki Indian, Ruperto Alvarez), and every provision was made for the safety of life and property, since it was ascertained that the tribe, always bloodthirsty and treacherous, had been rendered exceptionally hostile by recent conflicts with Mexican officials and vaqueros. The work of the expedition was greatly facilitated by the hearty coöperation of Sr Pascual Encinas, of Hermosillo, owner of the rancho on which the boat was built and which served as headquarters throughout the work in Seriland.

The *Anita* was launched December 15, and, after visiting Alcatraz island (on which the Seri obtain pelicans in large numbers), the party coasted to the turbulent strait aptly named El Infiernillo, and on December 19 crossed to Tiburon island, where ten days were spent in explorations and surveys, in unsuccessful efforts to open communication with the Indians (who fled at the approach of the party), and in examining their newly abandoned haunts and habitations. Returning, the party reached Señor Encinas' rancho December 31, when the leader repaired to Washington, leaving a small party under Mr Johnson to retraverse the country of the Papago and map the route of last year's expedition.

Papagueria has already been described as a semi-desert, lying south of Gila river and west of the Sierra Madre, in which the flora, the fauna, and the human inhabitants display characteristics of especial significance, since the rigorous environment has forced the organisms into a coöperation by which both individuality and solidarity are developed in exceptional degree. Many new observations bearing on this subject were made, and a collection of plants and animals was gathered. The social organiza-

tion of the Papago Indians was studied in the hope of ascertaining the influence of a peculiar environment on human institutions, and some useful results were obtained. The prehistoric works of Papagueria were found to be remarkable in extent as well as in number, one mountain three-quarters of a mile long and over 600 feet high being terraced from base to summit. The rock structure and geologic development of the region were carefully studied and found to be of great interest, and the planetable surveys will yield the first trustworthy map of the region.

The most interesting results of the expedition relate to the Seri Indians and their territory. Seriland is an ethnic and archeologic unit. It comprises Tiburon (about 500 square miles), Alcatraz (less than one square mile), and several smaller islands situated about midlength of the gulf of California, together with a more extensive area (some 2,500 square miles) of the adjacent mainland in the state of Sonora. The entire tract is mountainous. Tiburon island embraces half a dozen ranges with peaks of 3,000 to 4,000 feet; most of Alcatraz island is a rocky butte rising over 500 feet above the waters at its base, and the culminating peak of the mainland ranges is about 5,000 feet in altitude. The province is extremely arid. There are four permanent water holes on the mainland section, in two of which the water is quite and in a third somewhat brackish; Alcatraz is without fresh water; on Tiburon there is one small stream too feeble to reach the coast, besides a few small tinajas and springs, of which only one was found. Despite the dearth of fresh water, there is a meager flora of the ordinary subdesert character and a fairly rich fauna, while the gulf waters abound in marine life. The province is barred from the body of Sonora by a zone of saline flats (or playas) and sand dunes apparently homologous with the Mojave desert of California, the lower portions of which apparently lie below sea-level, this desert forming a much more effective boundary than the narrow strait separating Tiburon island from the mainland. Papagueria, with its entrenched mountains and ruined villages, ends on the hither border of the desert zone, while Caucasian culture, which has extended into almost every nook and corner of northern Mexico, ends with the settlements and outlying ranchos on Sonora and Bacuachi rivers, from 10 to 20 miles from the barrier desert. Within Seriland there are no people but the Seri, no ancient works save shell mounds and stone heaps such as the Seri now accumulate, no trace of culture except the essen-

tially indigenous culture of the Seri tribe. From the historical records of over three centuries it is known that the Seri have claimed and successfully defended this territory against all comers, and that although they have sometimes pushed beyond their natural boundary in predatory raids or for more persistent occupancy their hold on contiguous territory has never been firm or long maintained. Yet their occupancy of their own naturally protected land has been very long; some of their shell mounds are of great magnitude and have outlasted considerable geographic changes.

The Seri Indians are of fine physique—tall, broad-chested, and full-loined, with slender arms and legs, though the hands and especially the feet are large; their skin is notably dark, and their hair, which it worn long, is luxuriant and black or tawny. The men, and in only less degree the women, are noted for strength, celerity, and endurance—indeed, it is commonly through the possession of these qualities, rather than the aid of mental operations, that they capture game. They speak a language of limited vocabulary, supposed by some to be related to the Yuman, though the material collected during the earlier expedition indicates that it is distinct. Their habitations are rude temporary structures of bushes and turtle shells, designed for protection only against sun and wind; their ordinary clothing is a short skirt of pelican skin, dressed with feathers on, fastened about the waist with a neatly twisted cord of their own hair or of mesquite-root fiber, and for further protection against inclement weather and for bedding they use robes each made of four, six, or eight pelican skins sewed together with sinew. Their chief weapons are the bow and arrow, with clubs and stones, while their hereditary enemies dread their teeth and nails no less than their artificial weapons. They claim to poison their arrows, and this claim is supported by a considerable body of evidence. During recent years they have acquired a few guns by capture and theft. Their arrows were originally tipped with charred hard wood and later with chipped stone, though during recent years they have obtained a little sheet iron and other light metal which they use for this purpose and for knives, the primitive knife being a bit of cane or a sharp-edge shell. They manufacture a distinctive pottery, notable for lightness and fragility, in a few simple forms, make flat baskets somewhat similar to those of neighboring tribes, and navigate their strait and adjacent waters by means of well-

made and graceful balsas or reed canoes. Commonly they subsist on turtles, taken chiefly at night by spearing; pelicans and other water fowl, taken at night with clubs; and crabs, oysters, and clams, which are found abundantly along the shores, with a variety of other sea food. Occasionally they consume the flesh of the deer, turkey, bighorn, peccary, rabbit, land turtle, and other animals and birds found both on the mainland and the island, together with fruits of cacti, berries, mesquite beans, etc., in season. Most of their food is eaten raw, and much of it as carrion, and they neither plant nor cultivate in the slightest degree. They have no domestic animals, except dogs of a mongrel breed, apparently of coyote blood in large part. With the exception of the arrowpoint (which, like the pottery and perhaps the basketry, seems to have been acquired by imitation, and the designation of which is known only to a few of the tribe), their stone art is primitive and represents the stage of discovery and adaptation rather than the more advanced stage of invention and designed manufacture. Stones are picked up at random for various uses, and if they prove suitable are sometimes kept until worn and polished by use, though they are much more frequently thrown away or abandoned—*i. e.*, they are in a *protolithic* stage rather than in the neolithic or even the paleolithic stage, in both of which design and purposive manufacture play essential rôles. They appear to have a crude mythology in which the ancient pelican—a magical bird of melodious song—is assigned the leading place, Alcatraz (pelican) island being the first-formed land; and fetishes are in constant use. They are not known to have other ceremonials than mourning for the dead and the puberty feast for girls. The bodies of the dead are dressed and adorned, flexed into small compass, laid on the left side in shallow graves, provided with food and water as well as fetishes and favorite articles, and buried under earth or stones.

The social organization of the Seri appears to be indefinite, perhaps in consequence of long-continued warfare and diminution in numbers; the chieftainship is secured by individual prowess or shrewdness and tribal consent, and the tenure depends on continued success or popular whim. Originally the people appear to have been monogamous and some of them profess that condition at present, though actually polygyny prevails, the women much outnumbering the men. They are strictly, indeed fiercely, endogamous, alien connection being the blackest

crime in their calendar and invariably punished by death; and they describe a singular marriage custom which at once tends toward strengthening their endogamy and indicates long isolation. They are treacherous and savage in war, which they conduct by ambush or raid, being cowardly in open battle; they appear to thirst for alien blood and, as they profess and their conduct proclaims, never fail to kill people of other kin save when deterred by fear. So firmly implanted is the martial habit that, like feral carnivores, they avoid watering places; even a temporary camp is located a mile or two from the tinaja, while the permanent rancherias are usually five or ten miles from the nearest permanent supply of fresh water. A rancheria may contain from one to a dozen or even a score of separate habitations, each accommodating a family, and the places of abode are not permanent, but changed from day to day as the condition of food supply or caprice suggests. From historical records it is known that the Seri have been engaged in practically continuous warfare against all other peoples for two or three centuries, and their archeology and some of their characteristics and customs indicate that they have been inimical to neighboring tribes for many centuries. By their Mexican and Indian neighbors they are commonly believed to be anthropophagous, but this they consistently deny. The earliest estimates place their number at 2,000, but their population has been progressively reduced by warfare until now they number only about 350, including some 50 or 60 warriors and twice as many adult women, the remainder being children.

Considerable collections were made in Seriland, articles designed for barter being left in exchange; the gem of the collection is a fine balsa. As is usual in exploration, especially in the territory of warlike tribes, the work of the expedition was attended with some risk and hardship. For example, every drop of water consumed on the island was carried from 5 to 15 miles, over bad ground, by heavily armed men, in squads of five or more; and by reason of persistent gales the party were so delayed that food supplies were practically exhausted, even though eked out by crabs, oysters, shark-meat, etc. On several occasions, too, the value of the bisnaga (*Echinocactus*) as a source of water was tested, and much suffering was prevented by its use.

January 25, 1896.

BOOK REVIEWS

Ethnology. In two parts: 1. Fundamental ethnical problems. 2. The primary ethnical groups. Cambridge, University Press (New York, Macmillan), 1896. 12°, xxx, 442 pp.

The author of this work is one whose name is familiar as a diligent compiler in the field of anthropologic literature and a prolific writer, but whose claims as an original student in any department of it have not been conspicuous. This characteristic is that which is prominent in his present volume. It is an extended and generally meritorious compilation from current literature, with an agreeable flavor of literary spice, but with the obvious limitations unavoidable in mere closet-work in the natural sciences.

The title of the book is one example of the unfortunate terminology which he has adopted and which mars many chapters in the arrangement of their contents. Beginning in his first sentence with the admission that the term anthropology embraces all the branches of knowledge whose chief subject is man, he immediately proceeds to limit it to physical anthropology (somatology), thus opposing the example set by every learned society in the world which has the word "anthropology" in its title.

To ethnology he assigns the meaning given it by Latham some half century since, before it was a science at all, to wit, "the relations of the different varieties of man to each other." In it he embraces such disparate subjects as the zoölogical position of the human species, the question of evolution, craniology, the glacial theory and Tertiary geology, and, indeed, anything whatever related to the physical, mental, or social growth of the species, its varieties or individuals. This absence of a clear conception of the relations of the various branches of anthropology is a painful defect throughout the work, and is the less excusable as the leading German writers and several in this country have taken much pains to clear up the scientific obscurity which has long hung over anthropologic terminology.

The author tells us in his preface that his book is intended to be one of "the grand syntheses" of science, "here for the first time attempted in the English language." This bold claim is advanced on the same page on which he mentions with open in-

accuracy the title of an American work published a few years ago, the plan of which is so similar, so closely parallel, that one cannot but be surprised (?) that its true title is not once mentioned by Mr Keane, nor a single reference made to it in his voluminous notes. Indeed, his own work is scarcely more than an expansion of the one referred to, pursuing the same plan, treating the same subjects in nearly the same order, and in various portions advancing as his own the opinions set forth by that referred to, to wit, "Races and Peoples; Lectures on the Science of Ethnography;" by D. G. Brinton (New York, 1890). Any one who will compare the contents of the two works will readily perceive the analogies in subjects and method of treatment. Mr Keane borrows the term "Eurafrican" from that work without acknowledgment, and claims as his own the theory of the origin of the race in northwest Africa, which is expressed by the word.

His references, though numerous, must be taken with caution. For instance, in defending the Neanderthal skull he quotes Virchow as saying that it was "possibly pathological," whereas what that eminent teacher really claimed was that he had presented the "positive proof"—*den sicheren Nachweis*—that it was.

The chapter on language will scarcely give satisfaction, either to linguists or to ethnologists. That monosyllabism is always (or ever) to be regarded as "the last stage of linguistic growth" is too palpably erroneous to need refutation. His explanation of incorporating languages shows that he cannot have read the author he quotes about them, W. von Humboldt. His notion of linguistic radicals (page 208) is a complete misconception of their rise and functions, as any one can see by comparing it with Steinthal's definitions.

In his ethnographic sections the author is often found to follow doubtful guides; for instance, Lacouperie's hypothesis of the Akkads as Chinese, now exploded. In the American field, as soon as he leaves Major Powell's map, he is quite lost. The Goajiros are classed as Caribs, the Panche as Muyscas, the Warrau as Guaranian, the Fuegians and Botocudos as of one stock, and so on, errors for which there is no excuse in the face of the abundant literature on South American languages.

In his divisions of the human race, that he should insist on perpetuating the blunder of calling its white variety "Caucasian," after the vigorous protests of M. Chantre and others, is surprising and much to be regretted.

These defects and others in the same line do not prevent the book being a handy one for the general reader. It is the duty of the scientific reviewer to point out its weaknesses, and the author cannot complain, for he is himself far from mild in his criticisms of others; for instance, Mr Horatio Hale is charged with "extravagant assumption," M. de Quatrefages with "reckless assumption," and so on. Its pages would have been greatly improved by the display of kinder feelings and stricter justice to students in the same line of research.

D. G. Brinton.

Certain River Mounds of Duval County, Florida. Two Sand Mounds on Murphy Island, Florida. Certain Sand Mounds of the Ocklawaha River, Florida. By Clarence B. Moore. Philadelphia, 1895. (*From Jour. Acad. Nat. Sci., Phila., Vol. X.*)

I

This admirable paper by Mr Moore forms the third part of his study of the sand mounds of Florida and is fully equal in importance to those which precede it. The three together form the most satisfactory account of the archeology of our southern peninsula that has been published, and it is to be hoped that the author will continue the work so well begun.

It would be a pleasant task to review the paper named, but our object at present is to refer to some of the results of Mr Moore's explorations with special regard to the bearing they have on certain questions, aware, however, of the fact that this has been done in part by Mr Cushing in the April, 1895, number of the *Anthropologist*. Although we may not agree with Mr Moore in all his conclusions, there is no fault to find with his field work which has been done with scrupulous regard to accuracy and thoroughness, nor with the manner in which he has presented the results to the public, as nothing further in this respect could be desired.

The collections made present a strange medley of types difficult to account for. Some are apparently of local origin, but others bear a strong resemblance to types of different sections, and it is somewhat singular that the strongest leaning in this respect should be toward the types of the stone-grave district, especially of middle Tennessee.

The stone spades, of which Mr Moore discovered some three or four specimens, have hitherto been found, with few exceptions, in the stone-grave areas of middle Tennessee and Kentucky. Most of the pipes belong to the plain clay type, which appears from Jones' "Southern Indians" to have been in use among the mound-builders of Georgia. The same form of clay pipe was common among the stone-grave builders of middle Tennessee, the large stem-hole as well as the plain form being characteristic. The broad, flattened copper band with two longitudinal grooves found by Professor Putnam in a mound of Franklin county, Tennessee, is exactly paralleled by the specimen obtained by Mr Moore from the mound on Murphy island. The engraved shells found by him are considered by Mr Douglas, who is well informed on Florida archeology, as unique in the collections from that state; yet engraved shells somewhat similar have been discovered in the stone-grave sections of middle Tennessee and southern Illinois. The metal disks with embossed margin, several of which were discovered, are exactly imitated by the copper disk found in a stone grave of Tennessee and figured by Mr Thruston in his "Antiquities of Tennessee," who considers it post-Columbian. The modern-looking, pitcher-like lip on a few of the earthenware vessels is shown by Mr Thruston on two of the Tennessee vessels, and the double earthen lamps or cups are found in both sections.

This resemblance holds good in so many instances and in reference to some types so unusual, as to leave the impression that there was some relation between the peoples of the two sections. Possibly old Black Hoof's story of the former residence of Shawnees in Florida may be corroborated by mound testimony.

We observe throughout Mr Moore's papers repeated notices that the mounds contained no indications of contact with Europeans. In fact this idea appears to be, to some extent, a favorite one with him; but we must do him the justice to say that as a rule he appears to be freer from theoretic bias than most of us. However, there are some facts shown by his work which are difficult to account for if we accept this warning as decisive.

We notice that all the copper articles discovered appear to have been made of sheet copper, even to the cylindrical piercing implements. The author, speaking of the latter, says: "These piercing implements, of which the longest measured nineteen

inches, seemed, upon superficial examination, to be wrought of solid copper. A careful inspection, however, showed them to be made in at least two different ways—some from strips of thick sheet copper hammered over on itself and rounded by hammering; others of many thicknesses of copper in thin encircling sheets beaten into very close contact."

It would seem to be a useless expenditure of labor to hammer a lump of native copper into a thin sheet and then roll it up and hammer it into a solid implement. The spindle-shape copper articles found by the Bureau of Ethnology are, I believe, in all cases solid. It is true that copper beads made of sheet copper are not uncommon, and a few bracelets made of sheet copper also have been discovered; but the antiquity of the latter is yet a disputed point. This collection is probably the only one of any extent in which all the articles appear to be made of sheet copper.

There is no doubt that the particular forms given to the articles must be attributed to native workmanship. The point at issue is, Whence came the copper? And in what form was it received? John Hawkins, who touched the coasts of Florida in 1564–'65, says that when the French first arrived in that region gold and silver were obtained in considerable amount from the Indians, but the supply ere long gave out.

> How they came by this golde and siluer the Frenchmen know not as yet, but by gesse, who hauing trauelled to the Southwest of the cape, hauing found the same dangerous, by meanes of sundry banks, as we also haue found the same: and there finding masts which were wracks of Spanyards comming from Mexico, iudged that they had gotten treasure by them. For it is most true that diuers wracks haue beene made of Spanyards, hauing much treasure: for the Frenchmen hauing trauelled to the capeward an hundred and fifty miles, did finde two Spanyards with the Floridians, which they brought afterwar l to their fort, where-of one was in a carauel comming from the Indies, which was cast away foureteene yeeres ago, & the other twelue yeeres; of whose fellowes some excaped, othersome were slain by the inhabitants. It seemeth they had estimation of their golde & siluer, for it is wrought flat and grauen, which they weare about their neckes; othersome round like a pancake, with a hole in the midst, to boulster vp their breasts withall.*

Laudonniere asserts that it was obtained from the ships that were lost on the coast.†

* Hakluyt., III, p. 6.5. † Ibid., 369.

XUM

Mr Moore says the copper ornaments do not present a uniform thickness; this, however, does not establish his point, as copper was not rolled at that early date, and the variation in thickness may be attributed in part to native manipulation in forming the desired articles. Chemical analysis of the mound copper is far from satisfactory, and until something more definite than what has been given by Mr Moore is presented will not weigh against other data. It is rather strange that the gold ornaments described and figured by him, which he supposes were derived from the Spaniards, should bear the same pattern and have the same designs or markings as some of the copper articles which he decides are pre-Columbian. Possibly the one may antedate the arrival of Columbus by a few years, while the other must be ascribed to a date a few years subsequent to the discovery, yet we must attribute them to the same people.

It is noticeable that several pieces of the earthenware figured seem to have been patterned after what we may term the white man's hat. See, for example, part 2, fig. 3, pl. 28; fig. 3, pl. 33; and part 3, fig. 2, pl. 75. One (fig. 3, pl. 33) bears a remarkable resemblance to the Spanish-American sombrero. Four-leg pots, some three or four of which are figured by Mr Moore, are very rare, and generally inspire some doubt in regard to their antiquity. Colonel Jones remarks in regard to the single one figured in his work, "In general outline [it] assimilates very closely to the small iron pot of the present day."

However, it is to such excellent work as Mr Moore is doing that we must look for the data by which to solve these problems.

CYRUS THOMAS.

II

The two lines of investigation which are followed with regard to copper articles of aboriginal origin are:

1st. As to their age, whether of pre- or post-Columbian date.

2d. As to the sources of the metal itself.

The determination of the latter question will in many cases and in certain localities afford at least a plausible argument toward the settlement of the former, for if the article under consideration be made of copper containing certain foreign elements, or alloyed with tin or zinc, the probability, amounting almost to a certainty, exists that the metal is of European origin, whether of native manufacture or not, whereas if certain impurities be

absent and others present in very minute quantities it is almost certain that the metal comes from the native copper mines of Lake Superior, for if these foreign elements be present in approximately the same quantities as in copper from certain known localities it is at least probable that it was derived from these sources. This is the line of investigation which Mr Moore has followed with much acumen and in pursuing which he has had careful analyses made not only of some of the copper ornaments and implements from the Florida mounds, but of native copper from the several American sources from which it was possible that the copper of the aborigines may have been mined. Two of these analyses are of special interest as indicating that the mines of Cuba, whose outcrops were profitably worked even in our own day, yielded copper used by the natives of the Florida peninsula.

Of course, the proof of American origin of the metal does not establish the pre-Columbian age of the article, but it affords a presumption in favor of its manufacture before commerce with Europe supplied the coast tribes with copper and brass in such quantity that they used it, not only for domestic purposes, but for barter with interior tribes and when, therefore, in all probability the current of exchange for copper was from the east to the west, rather than from the west to the east. Mr Moore's memoir is especially notable, inasmuch as it pursues this precise and really scientific line of investigation—a line which Mr Cyrus Thomas in the Twelfth Annual Report of the Bureau of Ethnology points out to be desirable, but seems to have been unaware that Mr Moore had actually pursued, if we may judge by the following remark on copper articles of dubious antiquity: "A careful chemical and microscopical examination of the various specimens might possibly settle the point (of their pre- or post-Columbian age), though, as this has not been done, we must for the present rely upon inspection." JAMES DOUGLAS.

KENTUCKY MOUND EXCAVATION.—Mr George Owens, of Barboursville, Kentucky, has recently opened some large mounds east of that town, finding therein two peace pipes, a war axe, a large number of stone and shell beads, together with numberless arrow flints. The bowls of the pipes are 4 inches high and about 5 inches in circumference, while the stems measure 9 inches in length. The pipes are reputed to bear picture-writings.

NOTES AND NEWS

PRE-COLUMBIAN SYPHILIS IN YUCATAN.—Le Plongeon is of opinion that there is a connection between the Mayas of Yucatan and Asia. In his letter to me, which I gave *in extenso* in my article, "Pre-Columbian Leprosy" (Journal of American Medical Association, 1895), he says:

"As to Yucatan, where I have resided during eleven years, mostly among the aborigines, I do not recollect having met with a single leprous case among them. There were a few cases of syphilis where they have had contact with the whites. Today the Indian population of Yucatan seems to be a particularly healthy, vigorous race. I have seen cases of leprosy, but they were confined to the Creoles. Two of the principal families of Merida, the capital, are known to be leprous. Juan Peon Contreras, a member of said families, who generally intermarry among themselves, although very wealthy, was at one time director of the Yucatan Museum and a disgusting object to look at, literally falling to pieces. Still he was commingling with other people without hindrance. Another such case I saw at the island of Cozumel. I repeat, the cases are rare. I have no doubt that the disease was known in the country ages before the advent of the Spaniards. The Maya word for leprosy is *naycan*, from the verb *nay*, to corrode, to eat up. This is not a name of modern invention. It is found in the dictionaries and vocabularies of the language made by the Franciscans in the sixteenth century. I have a small medical book written in Maya language by a native one hundred years ago, but I do not find in it any mention of leprosy.

"My study of the mural paintings in the funeral chamber of Prince Coh, at Chichen, also of the bas-reliefs that adorn the walls of the public monuments in that ancient city, proves to me that in remote ages the inhabitants of Yucatan—in fact, of all Central America—had as close communication with those of all other civilized countries as they have today. They had close relations with India and Indo-China, where they introduced their civilization, as I show in my book, 'Queen Moo and the Egyptian Sphinx,' that will be given publicity in two or three months. I discovered portraits of Carthaginians sculptured on the walls, representations of negroes from Africa, Mongolians from east Asia, Burmese from Indo-China, etc., painted and carved on pillars and walls. In fact, the Nagas, the serpent-worshipers, who developed such high civilization in the south of India and the Indian peninsula, were immigrants from *Pâtala* (America), who reached Asia in times anterior to the invasion of India by the Aryans.

"I do not suppose that sailors in those times were more careful than sailors in our days, and I have no doubt that they spread diseases among

the inhabitants of the countries they visited, just as the crews of Captain Cook spread syphilis among those of the islands in the Pacific. The communication between Asia and America being then frequent, there can be no doubt that such contagious diseases as syphilis and leprosy were disseminated throughout the earth's inhabitants as they are today, and it seems to me impossible to determine where such a peculiar disease originated. We know that at one time syphilis was as common in America as leprosy in East India, and it is most probable that the inhabitants of these countries interchanged compliments, those of America introducing syphilis into Asia, those of Asia importing leprosy into America."

Mr Mercer, the curator of the section of American and prehistoric archeology, University of Pennsylvania, says in a communication that he does not share these views. "I have," he says, "discovered no proof for Le Plongeon's startling deductions as to the age of the Mayas and their migrations, but rather the contrary." He advised me to write to Mr Edward H. Thompson, of Merida, Yucatan, a fellow of the Royal Geographical Society, who has been hunting about Chichen Itza and other ruins for ten years or more and copying the very paintings which Le Plongeon says are representations of negroes, Mongolians, Burmese, etc. This gentleman writes: "Don't build too much on Le Plongeon's theories or claims. Not a single point of contact between the old and new worlds before the Columbian era can be proved by monuments or facts so far found in Yucatan or adjoining provinces. The Maya word you quote may have in the olden times referred to leprosy. *Naycam-Kanay* is used today as the term for a leper, yet my opinion is that in the olden times it was used more for consumption, phthisis. *Nayal* is used when one is fainting from *extreme debility*. I have found many skeletons, but have never observed the evidences of leprosy." Mr Mercer referred me also to Mr Teoberto Maler, who has been exploring sepulchers in various parts of Yucatan for many years and who is the correspondent of the German societies. This gentleman in his reply, dated Ticul, Yucatan, November 20, 1895, says:

"*Syphilis:* According to the ancient Spanish historians, it seems without any doubt that syphilis is an original American disease, and the Spaniards found it for the first time among the Indians of Haiti, Cuba, etc. It is also true that the ancient Peruvians imitated frequently in clay figures syphilitical accidents; for instance, human faces with the nose eaten away, etc. I saw at Paris, in the Ethnographical Museum of the Trocadero, many interesting specimens of Peruvian pottery of this kind.

"This naturally does not exclude that the same disease existed also in China or eastern Asia in very remote times.

"*Leprosy:* Mal de San Lazaro, lepra; in German, Aussatz. It seems to me that the Mexican Indians are entirely refractory to this terrible disease, which only exists in the Spanish class and mixed people (gente mestiza). Here, at Merida and other places of the peninsula, many of the principal families are infected with this plague, but I never saw or heard of a true Indian family affected with it, perhaps because the Indians are living principally on vegetable food. The Peruvian antiquities refer, as I believe, to syphilis and not to leprosy; but without doubt leprosy existed also in very ancient times in most of the Asiatic lands.

"Without doubt the snake, principally the snake head (sometimes treated naturally, sometimes in a fantastic manner with infinite variety) forms the principal element of decoration in Maya architecture. This alone would not be sufficient to establish a relationship (Verwandtschaft) with the architecture of the Naga tribes (dasyu), pre-Buddhistic snake and tree worshipers, if it were not for the fact that the Maya architecture also has some other very remarkable resemblances with ancient Hindostan architecture (pre-Aryan), attributable to the *dasyu* (Naga, etc., perhaps, to be counted with the Georgian-Hitit-Thibetan race) and even, perhaps, to the *Dravidian* style (Telinga, etc., probably of Turanian-Mongolian-Turkish origin). For instance, the Maya triangular decoration of the west façade of the eastern palace of '*las monjas*' at *Uxmal* recalls ancient Hindu wooden structures in use, for instance, in *Kashmir* bridges till our days.

"It would therefore be interesting to compare the Maya language with that of the *Naga* tribes, and also with Turanian languages of the *Dravida*."

Mr Maler adds to his letter some quotations from ancient Spanish writers bearing on the subject of pre-Columbian syphilis, which I give here in English.

Historiadores primitivos de las Indias Occidentales (Primitive Historians of the West Indies).—D. A. Gonzalez, Barcia, Madrid, 1749.

Tomo I. Oviedo in his relation ("summario") reports to the Emperor Charles V (conserving the ancient spelling), page 41. . . . Your Majesty may consider as a certain fact that this disease came from the Indies. It is very common among the Indians, but not dangerous either in those countries or in these. On the contrary, the Indians cure themselves very easily in the islands with this pato (guayacan-guaiac) and on terra firma with other herbs and things which they know, for they are very great vegetarians. The first time that this malady was seen in Spain was after Christopher Columbus had discovered the Indies and turned to these parts, and some Christians who came with him and assisted in this discovery, and those who made the second voyage were more numerous than the first, contracted this plague, and from them it was transmitted to other persons; and after the year 1495, when the Grand Captain Don Gonzalo

Fernandez de Cordova passed into Italy with an army to help the king, Don Fernando II, of Naples against King Charles VIII of France, the man with the thick head, being sent by the Catholic kings Don Fernando and Doña Isabel of immortal memory, ancestors of your majesty, this disease was introduced by those Spaniards, and it was the first time that it was seen in Italy, and as it was at the time when the French came with the said King Charles the Italians called that disease the French disease, and the French called it the disease of Naples, for they also had not seen it up to the time of that war, and from these it spread itself through the whole of christendom and passed into Africa by the means of some women and men attacked by it, because there is no manner in which it is so contagious as in the coitus of men and women, as has been seen many times; it also is communicated by eating in the dishes, drinking in the glasses and saucers which the diseased persons have used, and still more by sleeping in the sheets or garments of the same, and it is a grave and painful evil. No person who has eyes could help to see a number of people rotten and become lepers (podrida, i tornada de San Laçaro) on account of this disease; also many of them have died of it. Of the Christians who have conversation and coitus with the Indian women, few escape this danger; but as I have said, it is less dangerous there than here, both because there exists there that tree so useful and fresh it makes more operation; as for that other reason, that the temperature of the land is without cold and helps more those patients than the air and the constellations here."

* * * * * * * *

Fernando Colon, in his historical work, says that the Indians of Haiti gave to this disease the name *caracol* or caracacol (shells), and to the infected *cara-caracol* = man-shell, because their skin did become rough as shells.

* * * * * * * *

Tomo II, Historia de las Indias, . . . Francisco Lopez de Gomara, pagina 24, speaking of the syphilis, says also that the Spaniards did find this disease in the island "Española" = Haiti, etc. . . .

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CEREMONIAL MUTILATION.—Near Deonella or Deonhully, a town in Mysore, is a sect or subdivision of the Murresoo Wocul caste, every woman of which, previous to piercing the ears of her eldest daughter, preparatory to her being betrothed in marriage, must undergo the amputation of the first joints of the third and fourth fingers of her right hand. If the girl to be betrothed be motherless and the mother of the boy has not before been subjected to the amputation it is incumbent on her to suffer the operation.—*F. Buchanan Hamilton's Travels in Mysore in Asiatic Researches.*

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Prof. W. H. Holmes' memoir on archeological studies among the ancient cities of Mexico will be reviewed in the April number of the *Anthropologist*.